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FEDERAL COMMUNICATIONS COMMISSION  
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Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D. C. 20554

In the Matter of	)	
	)	
Revision of Part 22 of the	)	CC Docket 92-115
Commission's Rules Governing	)	Part 22.919
the Public Mobile Services	)	

To: The Commission

PETITION FOR RECONSIDERATION

  
M. G. Heavener  
President

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December 19, 1994

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## Summary

Part 22.919 of the Commission's rules dealing with Electronic Serial Numbers of Cellular Telephones will have a major adverse impact upon our firm, thousands of similar cellular services firms, and will result in millions of cellular customers paying billions of dollars in extra access fees. The revisions are against the best interests of the public and Federal, State and Local Government Agencies that use cellular telephones by trying to regulate the programming or transfer of the Electronic Serial Number (ESN) in them. Our firm, MTC Communications, a small minority owned business in the Washington, D. C. area sells radio equipment and services to area police and fire departments, will be impacted in a major way by this rule change.

We recognize the fraud problems, basically supported the wording of technical rule 22.919, and found no need to comment on it. We were very surprised by the Commission's discussion paragraphs 58 to 63 and in particular the Commission's refusal of the requests by C2+, Motorola, and Ericsson. We found many inaccuracies, contradictions and are in strong disagreement with these discussion paragraphs.

We believe that the rule change will have little or no impact on cellular fraud because there will be an estimated 30 million old phones in circulation by the time ones built under the new rule 29.919 show up in the marketplace. Most of these existing 30 millions phones can have their ESN's changed in minutes without damage to the phone. These phones clearly did not meet the ESN rules that were in

place at the time of manufacture and should be recalled for modification. The Commission has permitted firms such as Motorola, Nokia, and NEC to not meet the existing ESN rules and this is one of the reasons that fraud is so prevalent.

This rule change is clearly enacted at the request of the cellular lobby group, CTIA, and disguised to solve the fraud problem. They do not want to compete for the cellular extension phone business against firms such as C2+ and ourselves. By reprogramming the MIN/ESN to the same number, the extension phone service, which is demanded by the public, can be rolled out on all cellular systems and without the limitation and expense incurred with the carriers. This rule change is anti-competitive and not in the public interest.

We disagree with discussion paragraph 62 that modifying the ESN may violate type acceptance. FCC rule 2.1001 permits Class I changes that do not affect the basic operation of the transmitter. The change of a few bytes of information in the memory of a cellular telephone cannot void type acceptance. Should the Commission decide otherwise then the hundreds of thousands of phone that have had their ESN's modified by the carriers and service firms will have to have their type acceptance withdrawn and the phones recalled.

We will recommend a process to the commission that will permit ESN alterations in the field but will minimize abuse. This process will require extensive documentation, carrier notification and FCC control over the persons making the ESN changes.

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To: The Commission

PETITION FOR RECONSIDERATION

Part 22.919 of the Commission's rules dealing with Electronic Serial Numbers(ESN) of Cellular Telephones which are to go into effect on January 1, 1995 will have major adverse impact upon our firm, thousands of similar cellular services firms and will result in millions of cellular customers paying billions of dollars in extra line fees.

MTC Communications(A Corporation) is small minority owned business in the Washington, D. C. area engaged in the sales and service of land mobile radio and cellular communications equipment. The majority of our customers are Public Safety Agencies(Police & Fire) and include Montgomery County Maryland, State of Maryland, U.S. Park Service, Prince William County Virginia, City of Gaithersburg and the City of Baltimore. Many of these agencies use cellular telephones to compliment the two-way equipment that we have sold them and have requested that we program multiple phones on the same number for limited applications which will be detailed later.

## CELLULAR FRAUD DEFINITION

The overall tone of the Commission's comments and points of discussion imply that all modifications of a cellular telephone's ESN is for illegal purposes by using such negative terms such as alterable, tampering, fraudulent, and manipulation. The implication of the discussion section of this docket is that what C2+, our firm and thousands of legitimate cellular service firms do in changing ESN's is only for fraudulent purposes. We believe that this conclusion is wrong and that the Commission should differentiate between the reason why ESN's are changed in the field. We have attempted to explain these different reasons below:

1. Cloning -- This is the criminal activity where good MIN/ESN numbers are obtained and loaded into phones that are usually sold to criminals to be anonymous or to make foreign calls. This is a criminal activity to charge calls to a stranger and can be prosecuted under U.S. Code Title 18 and by local laws. It would appear that these laws are adequate.
2. Maintenance Transfer - This is the most common form of either mechanical or electrical transfer of an ESN from a defective phone to a spare or loaner. We estimate that as many as 5% or 1 million of the cellular telephones in use may have been modified for this purpose. Motorola, Ericsson and CTIA requested the ability to continue this process but were denied this capability. As shown in Exhibit 1, Motorola has an Express ESN process that permits ESN transfer which permits all Motorola phones to have their ESN easily changed.

As the largest supplier of cellular telephones in the U.S., we estimate that Motorola has shipped hundreds of thousands of phones with zeros or no unique ESN.

3. Extension Cellular Phones - Most cellular customers want an extension cellular telephone just as virtually all businesses and residential telephones have them. We STRONGLY DISAGREE with FCC Paragraph # 59 which states the following:

"Changing the ESN emitted by a cellular telephone to be the same as that emitted by another cellular telephone does not create an 'extension' telephone."

The above statement is not supported and is one of those inaccuracies we mentioned in the summary. Exhibit 2 shows that the functions of the wireline extension phones and those of cellular are virtually identical. We have had 6 years of experience operating multiple extension cellular telephone with no difficulties and all call being properly billed to the customer.

4. Critical Spares - Police, Fire, Ambulance, and other groups doing emergency services such as doctors use cellular telephones to receive and make critical calls. Many want a standby unit that can be plugged in or turned on in a matter of minutes should there be a failure of the primary phone. Because they are on duty weekends and holidays, they can't wait for the carrier to open or for their unit be repaired. Given the fact that a used cellular telephone sell for as little as \$50 we have provided exact duplicate standby units programmed with the same MIN/ESN combination. The users understand and accept that only one unit can be turned on at a time.

5. Reprogram a Customer's phone that has been illegally cloned - A relative new application is to help customers who have been hit by cloning fraud(#1 above). Many customers have published their cellular telephone numbers on calling cards and sales literature. Once cloning fraud is detected, the normal process is for the carrier to change the telephone number(MIN) to stop the illegal calls. Instead we have the ability to change the ESN on the customer's phone to permit the use of the same MIN as published on calling cards, literature, and in the hand of callers.

We do not know of a single case where a legitimate firm such as C2+ or the thousands of other similar firms have ever participated in cloning phone fraud case. The record in this docket does not provide any evidence that fraud would increase if C2+ and our firm were permitted to make ESN modifications for reason #2 thru #5 above.

We believe that reasons #2 thru #5 above are all legitimate reasons to change cellular telephone's ESN's and we petition the Commission to permit these applications. We believe that they are they all in the public's best interest.

#### THESE RULES CHANGES WILL HAVE LITTLE OR NO IMPACT ON FRAUD

There are currently an estimated 20 million AMPS compatible cellular telephones in service today in the US and an additional 5 million phones that are not activated for a variety of reasons. Virtually all of these phones can have their ESN's changed in a matter of minutes. Exhibit 3 is a flyer for a \$30 software package that will change the ESN in Motorola phones and many others in a matter of minutes. Any



person who wants to steal cellular service can use the millions of old phones for fraudulent use with or without this rule change. These old phones do not meet the Commission's Rules. The original rule dating back to 1981 Exhibit 4 stated:

"The circuitry that provides the serial number must be isolated from fraudulent contact and tampering. Attempts to change the serial number should render the mobile station inoperative"

None of the cellular telephones that we have seen meet this FCC rule and this is one of the reasons that cellular fraud is so widespread. It is likely that criminals who are responsible for cloning fraud do not read or abide by these FCC rules. Given the severe penalties of U.S. Title 18 for access device fraud which applies to cloning fraud, we believe that this extra Federal regulation is oriented toward firms such as C2+ and ourselves. We request that the Commission permit ESN changes under the groundrules that we will propose at the end of this petition. We believe that the Commission has to uniformly enforce its rules which means that most of the 25 million existing cellular do not meet Commission rules and did not meet type acceptance. If the Commission wants to enforce its rules and lower fraud then one option would be for it to require that the manufacturers recall all of their phones and modify them. The other option would be to require them to give each user a new phone that meets the new rules.

## TECHNICAL COMPATIBILITY

There were a number of technical reasons cited relative to why each cellular telephone required a unique ESN. We disagree with the statement in paragraph 54 that:

"The purposes of the ESN in a cellular telephone are similar to the Vehicle Identification Numbers in automobiles." It "... in order to assist in recovery if it is stolen." "... the ESN enables the carriers to bill properly for calls made from the telephones".

As previously stated the ESN can be easily changed in minutes. We believe that hundreds of thousand phones were made without a unique ESN. Also hundreds of thousand of other phones have had the ESN changed. We believe that the ESN is similar to the license tag. Each telephone has a manufacturer's name plate with their unique model and serial number and it is usually riveted on the transceiver as the VIN is done on cars. Many phones do not have the ESN marked on the phone. As explained earlier the ESN can be moved from one phone to another just as easily as the license plate can be moved from one car to another. Continuing our analogy, the tag as with the ESN can be stolen and placed on another car as is happening with the \$1 million per day cellular fraud.

The ESN is not used for billing. The MIN or phone number is used for billing. The ESN is only used to on each call to match to the phone number to authenticate access to the cellular system. In fact, I was one of the first cellular users in the early 1980's and the ESN feature was not enabled on the switch for many months. Paragraph 60 of

the comments states that:

"fraudulently emitting the same ESN without the license's permission could cause problems in some cellular systems such as erroneous tracking or billing;"

This statement is in direct contradiction with paragraph 59 which states:

"Changing the ESN emitted by a cellular telephone to be the same as emitted .. makes it impossible for the cellular system to distinguish between two telephones."

Our experience shows that cellular systems cannot distinguish between two phones with the same ESN/MIN and there can not be any billing or tracking problems. Criminals who clone phones depend on this technical principle that all calls are billed to the person that they have stolen the ESN/MIN from. All legitimate firms plus those carriers offering a similar extension phone service require in their agreements that only one phone can be powered on at a time thereby totally eliminating any possibility of a problem.

Finally, the cellular system is built on a "collision" type of access technology similar to that of the ethernet used in computer local area networks. Many customers bids for access to the system and it grants access only to those that have a good ESN/MIN combination. Again the ESN is only used momentarily by the telephone switch to see if a user is authorized.

#### TYPE ACCEPTANCE AND SYSTEM COMPATIBILITY

Paragraph 62 states that existing phones with altered ESN's "may may not be considered authorized equipment under the original type acceptance". We disagree with this statement and petition the Commission to delete the

remaining part of this paragraph that starts with "Nevertheless". It is clear to us from the type acceptance rules that changing a few bytes of ESN data in the computer type memory of a cellular telephone does not void type acceptance. Our authority is Paragraph 2.1001 (a) of the rules stating:

"Equipment of the same type is defined for purposes of type acceptance as being equipment which is electrically and mechanically interchangeable and in addition will have the same basic tube or semiconductor line up, frequency multiplication, basic frequency determining and stabilizing circuitry , basic modulator circuit and maximum power rating. Variations in electrical and mechanical construction, other than the items indicated above are permitted, provided the variation or change is made in compliance with the requirements of paragraphs (b), (c) and (d) of this section.

(b) Two classes of permissive changes may be made in type accepted equipment without requiring a new application for and grant of type acceptance.

(1) A Class I permissive change includes those modifications in the equipment which do not change the equipment characteristics beyond the rated limits established by the manufacturer and accepted by the Commission when type acceptance is granted, and which do not change the type of equipment as defined in paragraph (a) of this section. NO FILING WITH THE COMMISSION IS REQUIRED FOR A CLASS I PERMISSIVE CHANGE."

We change at most a few bytes of data in the memory of the cellular telephone. This memory is independent of the phone transmitter which the type acceptance rules address. The ESN is transmitted over the air as a modulated signal similar to voice. We believe our ESN changes fall under the Class I wording and requires no Commission approval.

Relative to system compatibility, the rules require a "32-bit binary number" with which we comply.

As stated earlier, the rules for ESN's were written for the manufacturers and not for firms such as ourselves who are field service groups. The existing rules for manufacturer are from paragraph 2.3.2 from OST bulletin No. 53:

"the serial number must be isolated from fraudulent contact and tampering. Attempts to change the serial number circuitry should render the mobile station inoperative."

The manufacturers have largely ignored this rule and a reiteration of this rule on October 2, 1991 in Report No. CL-92-3. We believe that the Commission should have considered taking some action against the manufacturers to make them recall the millions of the phones which don't meet this specification or give consumers new units built to the new Part 29.919.

#### **MULTIPLE PHONES ON THE SAME MIN/ESN CREATE AN EXTENSION PHONE**

Paragraph 59 states that "Changing the ESN emitted by a cellular telephone ... does not create an 'extension' cellular telephone." As stated earlier, we disagree with this statement. There is no support in the record for this statement. Exhibit 2 is a table which compares wired extension phones with cellular extension phones. We have tested this concept for many years and have extensive experience with this technology. Based on our data we conclude that the extension phone analogy is correct. All cellular telephones are customer owned equipment and the owners should be free to do with their property whatever they want as long as no harmful interference is created.

THE NEW RULE IS ANTI-COMPETITIVE AND ABOUT LARGE PROFITS

We believe the driving force behind this rule change is the CTIA in an effort to maximize carrier revenue and further their duopolistic practices. We believe that small firms such as C2+, ourselves, thousands of other legitimate firms and cellular customer who want our services will be injured by this rule making.

We strongly disagree with paragraph 60 (2) which states that:

"fraudulent use of such phones without the license's permission could deprive cellular carriers of monthly per telephone revenues to which they are entitled;"

It is very clear that permitting ESN reprogramming for legitimate customers will allow extension telephones. The cellular carrier's role is to provide a telephone number, a connection to the public switched network via cellular and a billing service for local and long distance calls. This is the same exact role that a wireline carrier provides. Cellular telephones are the property of the customer and they should be free to use them in any manner provided that no harmful interference is caused to the network.

The FCC and the courts have previously ruled that customers may own wireline extension phones without paying the carriers a fee for each phone. This was decided as part of the Carterphone/Hush-a-Phone and the breakup of AT&T. We were amazed by the statement in paragraph 60. FCC Chairman Reed Hundt has stated "I'm always asked to boil (the FCC's) philosophy down to one word that's competition,".

Huge sums of money are at stake with the carriers and this why CTIA is so anxious to see this rule passed. Cellular monthly rates have doubled from an average of \$12 per month to \$24 in this area and the carrier want to sell this extra lines. The carriers are also rolling out their two phone/one number service with the average monthly charge set at \$20/month. One of the carrier offering this service has assumed that 1 in 4 of their customers will buy this one number/two phone service. Using 20 million nationwide customers and the assumption that 25% of those customers will subscribe to the \$20/month service - this is \$1,000 million per year and \$5,000 million over a five year period. Most small companies that reprogram a customer's phone to make it an extension unit charge an average one time fee of \$120. Each customer will save \$1080 over a 5 year period and on a total basis this would be a \$4,400 Million saving to the public! This is a huge sum of money and it no wonder that CTIA is so anxious to see this rule passed so they can keep all of this revenue which is mostly profit. Exhibit 5 from Cellular Marketing illustrates CTIA's position as the carriers are rolling out their own extension phone service. OUR CELLULAR EXTENSION TECHNICAL APPROACH IS BETTER THAN THAT OFFERED BY THE CARRIERS

In paragraph 59, the Commission states that the carriers can provide the same extension phone service while each phone has a unique ESN. As shown by Exhibits 6 and 7, the carriers have many restrictions on their service. The carriers

provide a substandard level of service: a maximum of only one or two extension phones (We can provide as many as the customer wants); and only one of the phones can roam (any of ours can be used to roam). We both have the restriction that only one phone can be turned on at a time. The carriers have been slow to roll out their service because most switches are not able to offer this (MUSDN) service and their billing software has to be rewritten. These problems will prevent this service from being offered in most markets and the FCC has an obligation to see that customer can purchase a service that they clearly want.

WE PETITION THE COMMISSION TO MODIFY THE THESE RULES TO PERMIT FIELD ESN REPROGRAMMING FOR THE PURPOSES #2 THRU #5 ABOVE PROVIDED THE FOLLOWING PROCESS IS FOLLOWED:

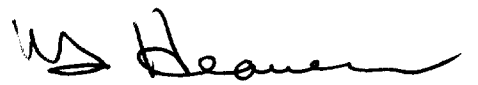
1. The owner of the cellular telephone that is being reprogrammed must sign an agreement that he/she is the owner of the MIN/ESN for the primary phone. He/she must produce identification and a current bill as proof that they are paying subscriber. If the customer is requesting an extension cellular telephone then the agreement must advise the customer that only one phone can be turned on at a time.
2. The person reprogramming the cellular phone must hold a valid FCC license. It is not necessary that the person have this level of skill but this person will act in the most responsible manner to prevent losing his/her license.
3. The modified phone should have an additional tag permanently attached that lists the old ESN and the new ESN, the technicians name, the date, and firms' name making the change.



4. The customer should be advised that he/she must notify their carrier that provides the service. The carrier can not deny service. This is the same process that exists today for wireline telephones.

Most firms who perform this service today follow many of these steps and we believe that the cellular network will be protected.

Cellular users including government agencies will benefit from this service. Our process will delivery a greater level of service and save the public billions of dollars annually while fostering competition in the industry.

A handwritten signature in dark ink, appearing to read "W. S. Heaner", is written over a horizontal line.

President  
MTC Communications

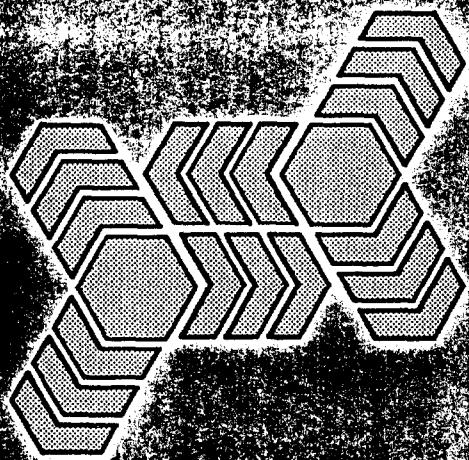


**MOTOROLA**

July 1993

Exhibit 1

**Cellular Subscriber  
Technical Training  
Manual**



**Motorola**

**Cellular Subscriber Group**

**68P09300A60-C**

# Series I

## Electronic Serial Number Transfer

The following procedure is used to transfer a customer's Electronic Serial Number from his Audio/Logic Board to a replacement board when it is determined that the customer's A/L board is defective. **Only the ESN is transferred by this procedure; the customer's telephone number and other NAM information must still be re-entered or copied from the defective board to the replacement.** Using this procedure can prevent the added cost and delay of changing the customer's ESN at the switching office when his A/L board must be replaced. The ESN can be transferred a maximum of twenty times before a new ESN will be required.

### Required Equipment

- New replacement Audio / Logic board.
- Two control/power cable kits (see the **bolded** notes below)
- Two Motorola handsets of any type: (When using a substitute cable kit only one handset is required, and it must be connected to the replacement Audio / Logic board.)
- An ESN Transfer Cable (Motorola Part No. 30-84407R01); and
- An In-line Test Connector 25-pin (Motorola Part No. 30-84406R01) or 15-pin (Motorola Part No. 01-80358A83).

### Important Notes on ESN Transfer

- Read and record the proper ESN of the mobile by using the 38# command before making the transfer.
- If any external speaker or option is connected to either cable kit, the procedure **will not** work.
- **The following substitute can be used for the defective board cable kit with a female 25-pin D-subminiature connector.** Connect ground on pins 3, 14, 17, 20, and 23; and connect A+ (+12 Volts) on pins 4 and 16, and pin 8 to pin 18 (connecting 8 to 18 eliminates the need for the second handset).
- **The following substitute can be used for the defective board cable kit with a female 15-pin D-subminiature connector.** Connect pin 3 (ground) to pin 9, pin 1 (+12 Volts) to pin 4, and pin 6 to pin 10 (connecting 6 to 10 eliminates the need for the second handset).
- All replacement A / L boards are shipped from the factory with a new ESN programmed in them. When the ESN Transfer is successful, this factory ESN is erased. If, the transfer is unsuccessful the new factory ESN can be used, requiring that the switching office be notified.
- The ESN Transfer Cable is not polarized; either end of the cable may be connected to either A / L board. The cable is wired as follows:

<u>One End</u>		<u>Other End</u>
pin 1	<----->	pin 1
pin 11	<----->	pin 18
pin 13	<----->	pin 13
pin 18	<----->	pin 11

All the other pins used in the ribbon style cable are for guide purposes only

## Express Exchange using Universal ID Transfer

**Express Exchange** is Motorola's unique servicing procedure (using Universal ID Transfer) to place a customer with a defective telephone back into service in ten minutes or less. By following the QuickFix™ Troubleshooting Strategy outlined on the first page of Section 5, a problem can be rapidly identified. And if the problem is in the transceiver of a mobile or portable, a Universal ID Transfer moves the personality of the defective telephone into the replacement unit.

The Universal ID Transfer procedure allows the cellular telephone number, electronic serial number, system parameters, and telephone numbers in memory (i.e., the personality of the telephone) to be transferred from a defective radio to an Express Exchange Loaner if the unit is a portable, or to an Express Exchange Spare if the unit is a mobile. It is now possible to perform a Universal ID Transfer on most currently manufactured Motorola portable telephones, including the MicroT-A-C's, the Ultra Classics, and the "8000's," as well as on most Series II and III mobiles. TDMA telephones do not currently support Universal ID Transfer.

The Universal ID Transfer procedure is different for each portable model (the MicroT-A-C's, early Ultra Classics, current Ultra Classics, and the F09LF... and F09PY... Series "8000's"), and there is a separate procedure for the two mobile models (Series II and Series III). Also, there are different Universal Loaners or Spares for each type of telephone. Specifically, there are separate Universal Loaners for

F09HG... AMPS MicroT-A-C DPC I	S2457 (or S2927)
F09 HL... / F09RY... AMPS / NAMPS DPC II	S2927 (or S2457)
F09HY... / F09HR... NAMPS MicroT-A-C Lite & Ultra Lite	S2619* (or S3465)
Pocket Telephone	S2957* (or S3467)
F09LF... Series AMPS "8000" Portables	S2468 (or S2973)
F09PY... Series NAMPS "8000" Portables	S2973 (or S2468)
F09NF... Series AMPS Ultra Classic	S2470* (or S2974* or S3499)
F09QY... Series NAMPS Ultra Classic	S3499 or S2974* (or S2470*)

There are separate Universal Spares for

Series II	SUN1520AA (or SUN1510AA*)
AMPS Series III	SUN1700AA
NAMPS Series III	SUN1705AA

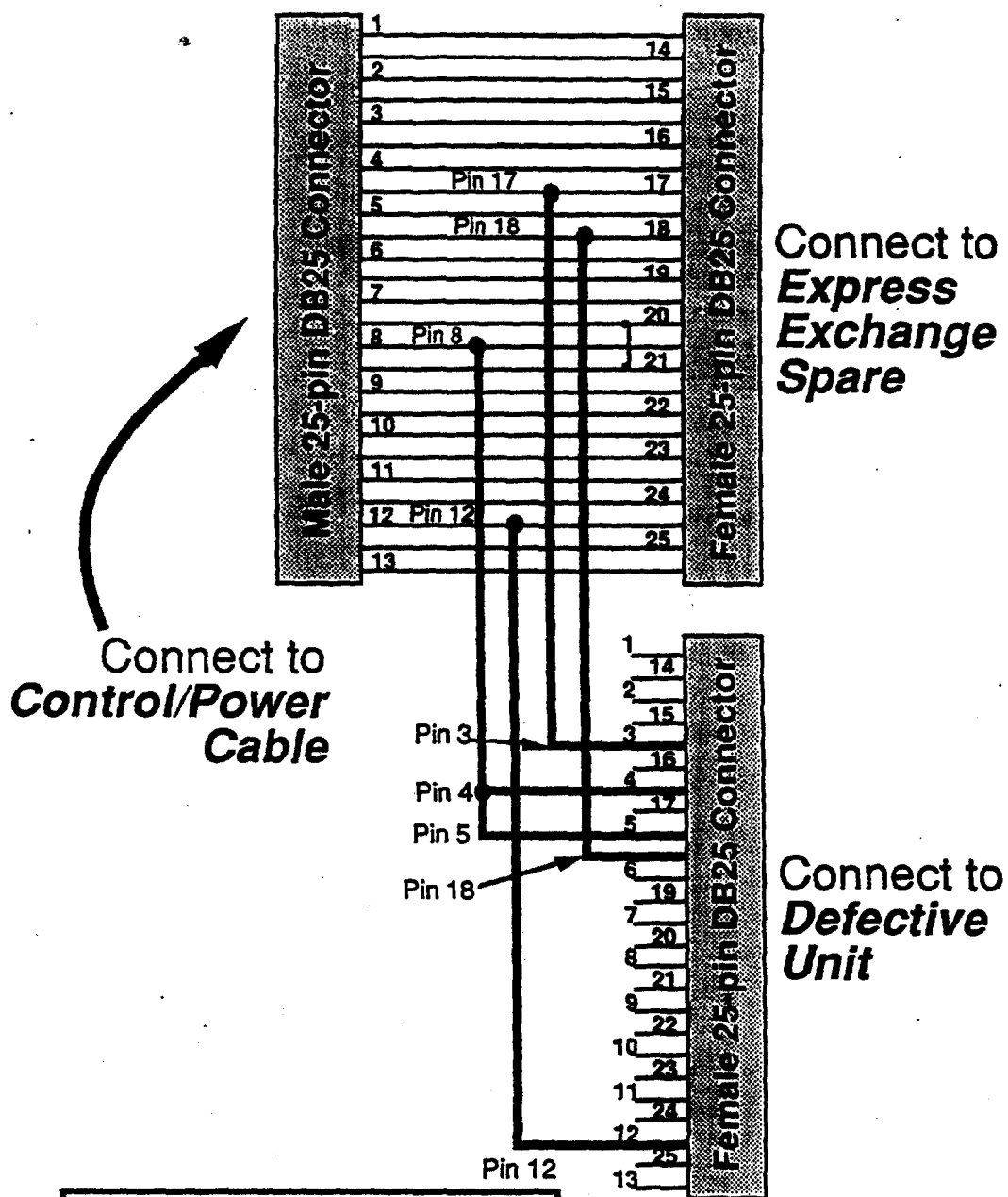
\*Units marked with an asterisk are no longer available.

Do not perform a Universal ID Transfer from a NAMPS mobile to an AMPS Express Exchange Spare, or from an AMPS mobile to a NAMPS Express Exchange Spare. Identity Transfer from a NAMPS portable to an AMPS Loaner, or from an AMPS portable to a NAMPS Loaner is allowed.

Universal ID Transfer for portables must be performed twice: once when the defective unit is first brought in for repair, and again when the repaired unit is returned from the National Service Center. But for mobiles Universal ID Transfer is only performed once. However, the Express Exchange Spare is not truly lost, because the Spare software is retained by the service shop. When the repaired transceiver is returned from the National Service Center, it will be an Express Exchange Spare when the Spare software is reinserted. In an emergency, the Spare software may be installed into an off-the-shelf unit, and that transceiver will now be an Express Exchange Spare.

Express Exchange Loaners (*not* Spares) are intentionally made to behave as lower-tier telephones to help ensure that these units will be returned when the customer's repaired telephone is ready to be presented back to him. This means that while the customer is using the Express Exchange Loaner, features may be inaccessible. This is not true of Express Exchange Spares because Identity Transfer for mobiles only occurs once and no features are lost.

## ntity Transfer Cable (SLN7012A) & Setup



### Fail Codes for Universal ID Transfer:

Fail	Incorrect setup or defective equipment
Fail 2	No ESN in defective unit
Fail 11	Incompatible radio models
Fail 12	Bad replacement radio

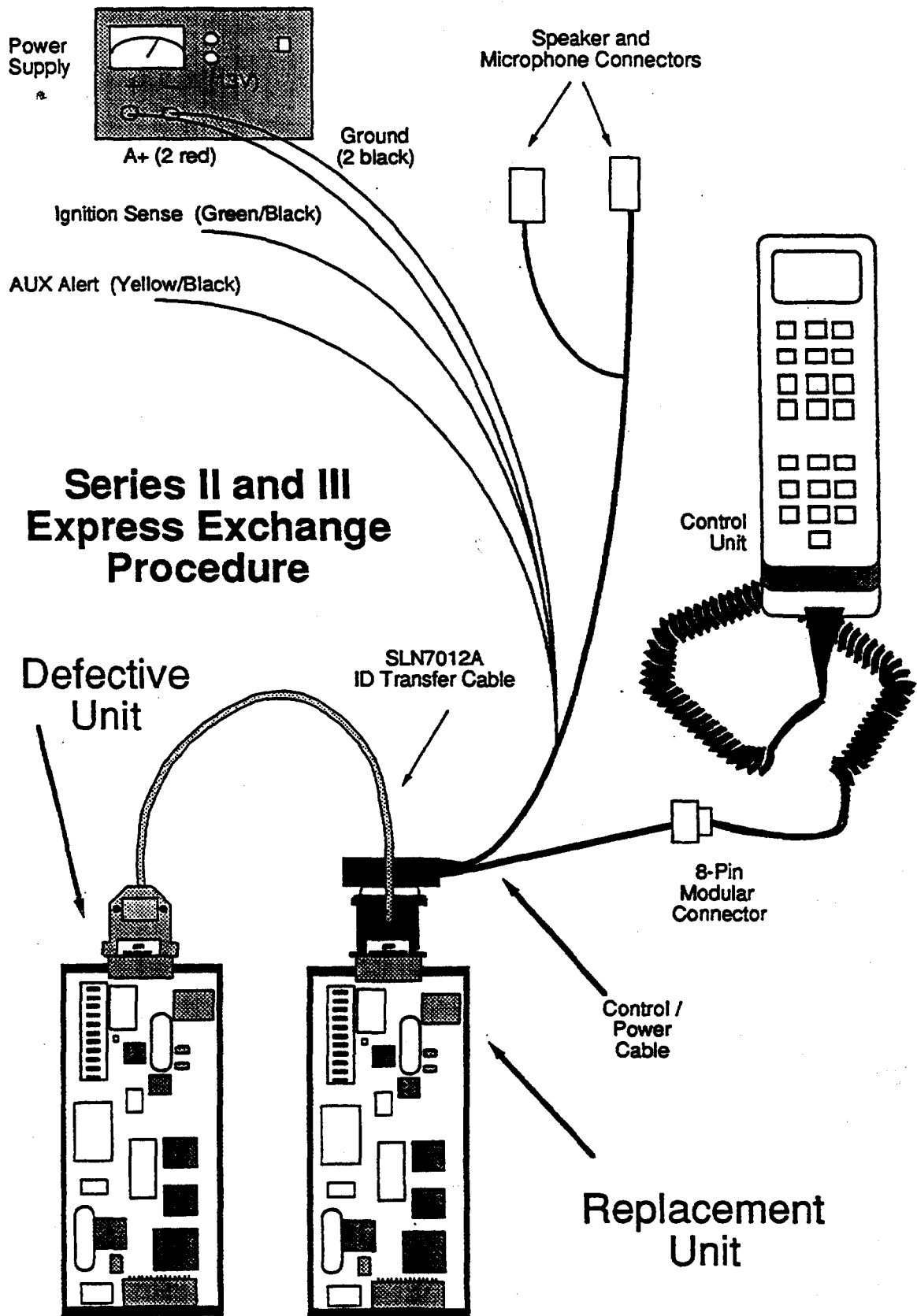


Exhibit 2

COMPARISON OF EXTENSION TELEPHONES

<u>TYPE OF CALL</u>	<u>WIRELINE</u>	<u>CELLULAR</u>
Outbound Calls		
All local calls billed to 1 number	YES	YES
All long distance call to 1 number	YES	YES
Only one call placed at a time	YES	YES
Call from one phone to another	NO	NO
Inbound Calls		
Single number for all phones	YES	YES
All Phones Ring	YES	*
Can turn off/disconnect phones	YES	YES
Conference call	YES	NO

\* Only if in same cell -- only one phone should be on at a time.

# VENDOR SPECIAL Cellular Software

**Allows multiple cellular phones on a single phone number\***

**Easily reprogram your phones with any IBM-type PC**

**No extra access or activation fees--Save hundreds of dollars\$ !**

**Comprehensive manual and software included**

**Works with Motorola, Panasonic, Mitsubishi, Tandy, Uniden, Audiovox Radio Shack, Nokia, NEC and many more.**

**Easy step-by-step instructions**

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### CELLULAR SOFTWARE

**Clone Phones !  
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This package is to be used for informational and educational purposes only. The user shall accept full responsibility for any misuse of the product.

**CELL MATES  
2520 Welsh Road  
Suite 316  
Philadelphia, PA  
19152 .**

**\* This software allows alteration of ESN and MIN data in cellular telephones - the user is solely responsible for its proper use.**



### 2.3.2 SERIAL NUMBER

The serial number is a 32-bit binary number that uniquely identifies a mobile station to any cellular system. It must be factory-set and not readily alterable in the field. The circuitry that provides the serial number must be isolated from fraudulent contact and tampering. Attempts to change the serial number circuitry should render the mobile station inoperative.

### 2.3.3 STATION CLASS MARK

Class-of-station information referred to as the station class mark (SCM<sub>p</sub>) must be stored in a mobile station. The digital representation of this class mark is specified in the table below.

Station Class Marks	
Power Class (See Section 2.1.2.2)	SCM <sub>p</sub>
class I	XX00
class II	XX01
class III	XX10
reserved	XX11
Station Types	
continuous transmission*	00XX
discontinuous transmission*	01XX
reserved	10XX
reserved	11XX

\*When DTX<sub>p</sub> is set to '1', the mobile station may use the discontinuous transmission mode on the voice channel. Otherwise, the mobile station must use the continuous transmission mode.

### 2.3.4 REGISTRATION MEMORY

If the mobile station is equipped for autonomous registration, then a minimum of four 21-bit (20 data bits plus an overflow bit) next registration (NXTREG<sub>p</sub>) and corresponding 15-bit system identification (SID<sub>p</sub>) pairs must be retained when the mobile station power is turned off. The data retention time under power-off condition must be longer than 48 hours. If the integrity of the stored data can not be guaranteed after the mobile station is disconnected from the vehicle battery, then the memory must be set to zero when power is re-applied to the mobile station.

### 2.3.5 ACCESS OVERLOAD CLASS

A four-bit number (ACCOLC<sub>p</sub>) must be stored in the mobile station and used to identify which access overload class field controls access attempts by the mobile station (see Section 2.6.3.4).

### 2.3.6 ACCESS METHOD

A one-bit access method (EX<sub>p</sub>) must be stored in the mobile station and used to determine if the extended address word must be included in all access attempts (see Section 2.6.3.7).